Frequently Asked Questions for Doctors

1. **Where can I find more basic information?**
   <http://www.cc.nih.gov/drd/rfa>
   Patient information, physician handouts, nursing care, cartoons, videos, publications, protocols.

2. **Why RFA?**
   Cheap, safe, fast, easy and predictable. Fewer sessions than alcohol. Safer than cryotherapy percutaneously.

3. **Can you ablate non-liver tissue?**
   Yes, if you are careful. Collateral damage may be more likely. Realistically define goals with patient and referring oncologist or oncologic surgeon. Ablation rules in the liver do not apply elsewhere. Burns can be very unpredictable. RFA has been applied to extra-hepatic sites such as lung [16], bones [17] kidney [18-23], breast, and adrenal.

4. **Conscious sedation or general anesthesia?**
   Physician preference. Liver lesions on the capsule or diaphragm as well as larger tumors tend to be more painful, and may require general anesthesia. Ask the anesthesiologist to suspend respirations for needle placements. Toradol is useful for post-procedural pain, although only use one or 2 doses to limit renal toxicity.

5. **Ultrasound or CT?**
   Physician preference. Precise needle location is vital. Occasionally, using both CT and US alternating may provide the best placement and monitoring during treatment. Ultrasound images 2 to 5 minutes after RFA may be more accurate in defining ablation volume than intraprocedural images. Use 50 cc contrast boluses during RFA as needed. MR thermometry may prove useful in the future.

6. **How often to follow-up imaging?**
   Physician preference. Same-day enhanced imaging is done to document treatments and lack of complications. Follow-up imaging depends on tumor (location, growth rate, histology, organ, concern for incomplete treatment). Most failures are evident by 6-12 months.

7. **What to tell the patient for post-procedure care?**
   For a PDF patient handout, see:
   <http://www.cc.nih.gov/ccc/patient_education/procdiag/pra.pdf>

8. **Which system?**
   Physician preference. There are strengths and weaknesses to each, making the availability of all systems desirable, but often impractical. We have all 4 and choose based upon patient and tumor specific issues (location, importance of minimizing collateral damage, proximity of large vessels, desired treatment volume and shape, importance of uniform lesion formation, bleeding risk, respiratory motion, probe pathway, safe deployment). Low power systems (50-100 watt) are not as good, especially for high flow tumors or kidney tumors.

9. **Is RFA FDA-approved?**
   The 4 systems each have FDA 510K clearance for “soft tissue ablation”. To what this exactly applies is unclear. At least 2 of the 4 have similar clearance for unresectable liver tumors.

   Hippocrates quote**: **What is not cured by the knife may be cured by fire. **(**But RFA is not yet an alternative or substitute to surgery).

10. **What to do with the post-procedural fever?**
    Low grade fever may occur in the first few days to a week after RFA, especially with large ablations. A mild post-RFA syndrome may occur, which is generally much less symptomatic than the typical post-chemoembolization syndrome or post-tumor lysis syndrome. Treat and culture fevers above 101. Tap or drain questionable sources.

11. **What about prophylactic antibiotics?**
    Controversial - We use antibiotics pre-RFA and we follow up with a week of antibiotics in patients with ascites or in patients with central or portal lesions or with large lesions, or with kidney tumors touching the collecting system. Abscess risk is increased in patients with prior hepatic artery therapy, biliary to enteric anastomoses and even with sphincterotomy. We broaden spectrum of coverage in these patients.

12. **How about hydration?**
    Hydration pre- and post-procedure should be as aggressive as the patient's medical condition allows. Aggressive hydration may limit renal toxicity or ATN from contrast or tumor-lysis related phenomena, and may decrease the symptoms of post-embolization.

13. **Contraindications?**
    Relative contraindications include tumor volume >50% of the liver, uncorrectable coagulopathy, abutment of bowel, porta hepatis or central location, and Childs class C.

14. **What about central liver lesions?**
    There are more risks and complications associated with treating cholangiocarcinoma as well as centrally-located liver lesions. Large vessel abutment may also limit successful tumor eradication. Targeting vessels or balloon occlusion of the nearby hepatic vein may help.

15. **Temperature vs. Impedance control?**
    Both temperature and impedance are very inter-related and reflect tissue cooking or overcooking in a similar fashion. It probably does not matter which method is used. Temperature information at the periphery of the thermal lesion (from thermocouples on the RFA probes or external thermocouples) may help to assess skip areas next to vessels from heat sink.

16. **How to overlap spheres?**
    This is the hardest part of this procedure. More overlap is better than less. Spheres can be added in cylinders through the same capsule puncture, or in three dimensions with more than one puncture. Treat deep first, since boiling bubbles obscure on ultrasound. Get spatial information memorized before first burn obscures.